

CLAIMS

1. An information recording medium on which an entire stream including a plurality of portion streams, each of which comprises a series of content information, is multiplexed and recorded by a unit of packet, which is a physically accessible unit, said information recording medium comprising:

an object data file, which is a logically accessible unit, for storing (i) object data which is multiplexed by the unit of packet and which comprises a plurality of packets, each storing therein a piece of the content information, and (ii) one correspondence definition information which defines a correspondence relationship between a plurality of packets multiplexed on a time axis and the plurality of portion streams and which itself is multiplexed by the unit of packet;

a reproduction sequence information file for storing reproduction sequence information which defines a reproduction sequence of the object data stored in said object data file; and

an object information file for storing, as reproduction control information for controlling the reproduction of said object data file, another correspondence definition information which is not multiplexed by the unit of packet and which defines the correspondence relationship aside from the one correspondence definition information.

2. The information recording medium according to claim 1,

wherein

the one correspondence definition information defines the correspondence relationship by interpretation rules which mutually differ among a plurality of object data stored in said object data file

5 and

the another correspondence definition information defines the correspondence relationship by interpretation rules which are the same among the plurality of object data.

10 3. The information recording medium according to claim 1 or 2, wherein the entire stream includes two or more portion streams, each comprising video information as the series of content information.

15 4. An information recording apparatus for multiplexing and recording an entire stream including a plurality of portion streams, each of which comprises a series of content information, onto an information recording medium by a unit of packet, which is a physically accessible unit, said information recording apparatus
20 comprising:

a first recording device for recording an object data file, which is a logically accessible unit, for storing (i) object data which is multiplexed by the unit of packet and which comprises a plurality of packets, each storing therein a piece of the content information,
25 and (ii) one correspondence definition information which defines a correspondence relationship between a plurality of packets

multiplexed on a time axis and the plurality of portion streams and which itself is multiplexed by the unit of packet;

a second recording device for recording a reproduction sequence information file for storing reproduction sequence information which defines a reproduction sequence of the object data stored in said object data file; and

a third recording device for recording an object information file for storing, as reproduction control information for controlling the reproduction of said object data file, another correspondence definition information which is not multiplexed by the unit of packet and which defines the correspondence relationship aside from the one correspondence definition information.

5. The information recording apparatus according to claim 4, wherein

the one correspondence definition information defines the correspondence relationship by interpretation rules which mutually differ among a plurality of object data stored in said object data file and

the another correspondence definition information defines the correspondence relationship by interpretation rules which are the same among the plurality of object data.

6. The information recording apparatus according to claim 4 or 5, wherein

the entire stream comprises at least one portion of a

transport stream of MPEG 2 (Moving Picture Experts Group phase 2) which is digitally transmitted and broadcasted and is received at a set top box and

said first recording device records said object data file such
5 that one correspondence definition information, which defines the correspondence relationship included in the received entire stream, is included in one portion of the object data in the multiplexed form with the content information.

10 7. An information recording method of multiplexing and recording an entire stream including a plurality of portion streams, each of which comprises a series of content information, onto an information recording medium by a unit of packet, which is a physically accessible unit, said information recording method
15 comprising:

a first recording process of recording an object data file, which is a logically accessible unit, for storing (i) object data which is multiplexed by the unit of packet and which comprises a plurality of packets, each storing therein a piece of the content information,
20 and (ii) one correspondence definition information which defines a correspondence relationship between a plurality of packets multiplexed on a time axis and the plurality of portion streams and which itself is multiplexed by the unit of packet;

a second recording process of recording a reproduction
25 sequence information file for storing reproduction sequence information which defines a reproduction sequence of the object

data stored in said object data file; and

a third recording process of recording an object information file for storing, as reproduction control information for controlling the reproduction of said object data file, another correspondence
5 definition information which is not multiplexed by the unit of packet and which defines the correspondence relationship aside from the one correspondence definition information.

8. The information recording method according to claim 7,
10 wherein

the one correspondence definition information defines the correspondence relationship by interpretation rules which mutually differ among a plurality of object data stored in said object data file and

15 the another correspondence definition information defines the correspondence relationship by interpretation rules which are the same among the plurality of object data.

9. The information recording method according to claim 7 or 8,
20 wherein

the entire stream comprises at least one portion of a transport stream of MPEG 2 which is digitally transmitted and broadcasted and is received at a set top box and

said first recording process records said object data file such
25 that one correspondence definition information, which defines the correspondence relationship included in the received entire stream,

is included in one portion of the object data in the multiplexed form with the content information.

10. An information reproducing apparatus for reproducing at
5 least one portion of the recorded entire stream from said information recording medium according to claim 1 or 2, said information reproducing apparatus comprising:

a reading device for physically reading information from said information recording medium; and

10 a reproducing device for reproducing the object data by demultiplexing the information read by said reading device with destroying the one correspondence definition information on the basis of the reproduction control information and the reproduction sequence information included in the information read by said
15 reading device.

11. The information reproducing apparatus according to claim 10, wherein said reproducing device demultiplexes such that a packet corresponding to one or a plurality of portion streams that are
20 reproduction objects out of the plurality of packets multiplexed is extracted in accordance with the another correspondence definition information included in the information read by said reading device.

12. An information reproducing method of reproducing at least
25 one portion of the recorded entire stream from said information recording medium according to claim 1 or 2, said information

reproducing method comprising:

a reading process of physically reading information from said information recording medium; and

5 a reproducing process of reproducing the object data by demultiplexing the information read by said reading device with destroying the one correspondence definition information on the basis of the reproduction control information and the reproduction sequence information included in the information read by said reading device.

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13. The information reproducing method according to claim 12, wherein said reproducing process demultiplexes such that a packet corresponding to one or a plurality of portion streams that are reproduction objects out of the plurality of packets multiplexed is
15 extracted in accordance with the another correspondence definition information included in the information read by said reading process.

14. An information recording and reproducing apparatus for
20 recording the entire stream onto and reproducing at least one portion of the recorded entire stream from said information recording medium according to claim 1 or 2, said information recording and reproducing apparatus comprising:

a first recording device for recording said object data file;
25 a second recording device for recording said reproduction sequence information file;

a third recording device for recording said object information file;

a reading device for physically reading information from said information recording medium; and

5 a reproducing device for reproducing the object data by demultiplexing the information read by said reading device with destroying the one correspondence definition information on the basis of the reproduction control information and the reproduction sequence information included in the information read by said
10 reading device.

15. An information recording and reproducing method of recording the entire stream onto and reproducing at least one portion of the recorded entire stream from said information
15 recording medium according to claim 1 or 2, said information recording and reproducing method comprising:

a first recording process of recording said object data file;

a second recording process of recording said reproduction sequence information file;

20 a third recording process of recording said object information file;

a reading process of physically reading information from said information recording medium; and

a reproducing process of reproducing the object data by
25 demultiplexing the information read by said reading process with destroying the one correspondence definition information on the

basis of the reproduction control information and the reproduction sequence information included in the information read by said reading process.

- 5 16. A computer program for controlling record which controls a computer provided in said information recording apparatus according to claim 4 or 5 and which causes the computer to function as at least one portion of said first recording device, said second recording device, and said third recording device.

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17. A computer program for controlling reproduction which controls a computer provided in said information reproducing apparatus according to claim 10 or 11 and which causes the computer to function as at least one portion of said reproducing
15 device.

18. A computer program for controlling record and reproduction which controls a computer provided in said information recording apparatus according to claim 14 and which causes the computer to
20 function as at least one portion of said first recording device, said second recording device, said third recording device, and said reproducing device.

19. A data structure including a control signal, in which an
25 entire stream including a plurality of portion streams, each of which comprises a series of content information, is multiplexed by a unit

of packet, which is a physically accessible unit, having:

an object data file, which is a logically accessible unit, for storing (i) object data which is multiplexed by the unit of packet and which comprises a plurality of packets, each storing therein a piece
5 of the content information, and (ii) one correspondence definition information which defines a correspondence relationship between a plurality of packets multiplexed on a time axis and the plurality of portion streams and which itself is multiplexed by the unit of packet;

10 a reproduction sequence information file for storing reproduction sequence information which defines a reproduction sequence of the object data stored in said object data file; and

an object information file for storing, as reproduction control information for controlling the reproduction of said object data file,
15 another correspondence definition information which is not multiplexed by the unit of packet and which defines the correspondence relationship aside from the one correspondence definition information.